

## **What is claimed is:**

**[Claim 1]** 1. A method for modifying a 2T write strategy on an optical disk drive, the method comprising:

(a) forming a test odd mark and a test even mark on an optical disk;  
(b) detecting signal waveforms associated with the test odd mark and the test even mark; and

(c) when a first timing offset is detected between a timing occurring the maximum signal strength in the signal waveform associated with the test even mark and a timing occurring the maximum signal strength in a first ideal waveform, adjusting a plurality of writing periods used for forming an even mark according to the first timing offset; and when a second timing offset is detected between a timing occurring the maximum signal strength in the signal waveform associated with the test odd mark and a timing occurring the maximum signal strength in a second ideal waveform, adjusting a plurality of writing periods used for forming an odd mark according to the second timing offset.

**[Claim 2]** 2. The method of claim 1 wherein the step (c) further comprises: when forming the even mark on the optical disk, using a first writing period and a second writing period to output a write power, the first writing period and the second writing period having different lengths.

**[Claim 3]** 3. The method of claim 2 wherein the first writing period comprises a length for outputting the write power to the optical disk, and the second write period comprises a length for outputting a bias power to the optical disk.

**[Claim 4]** 4. The method of claim 1 wherein the step (c) further comprises: when forming the even mark on the optical disk, using a first writing period, a second writing period and a third writing period to output a write power, the

second writing period being between the first writing period and the third writing period, and the first writing period, the second writing period and the third writing period having different lengths.

**[Claim 5]** 5. The method of claim 4 wherein the first writing period comprises a length for outputting the write power to the optical disk, the second writing period comprises a length for once again outputting the write power to the optical disk, and the third writing period comprises a length for outputting a bias power to the optical disk.

**[Claim 6]** 6. The method of claim 1 wherein the step (c) further comprises: when forming the even mark on the optical disk, using a first writing period, a plurality of second writing periods and a third writing period to output a write power, the plurality of the second writing periods being between the first writing period and the third writing period, each of the second writing periods being the same in length, and the first writing period, one of the second writing periods and the third writing period having different lengths.

**[Claim 7]** 7. The method of claim 6 wherein the first writing period comprises a length for outputting the write power to the optical disk, each of the second writing periods comprises a length for once again outputting the write power to the optical disk, and the third writing period comprises a length for outputting a bias power to the optical disk.

**[Claim 8]** 8. The method of claim 1 wherein the step (c) uses a firmware of the optical disk drive to set up the writing periods used for forming the odd mark and the even mark.

**[Claim 9]** 9. The method of claim 1 wherein the step (c) shortens the total lasting time of the writing periods used for forming the even mark when the timing occurring the maximum signal strength in the signal waveform

associated with test even mark lags behind the timing occurring the maximum signal strength in the first ideal waveform, and the step (c) lengthens the total lasting time of the writing periods used for forming the even mark when the timing occurring the maximum signal strength in the signal waveform associated with the test even mark leads the timing occurring the maximum signal strength in the first ideal waveform.

**[Claim 10]** 10. The method of claim 1 wherein the step (c) further comprises: when forming the odd mark on the optical disk, using a first writing period and a second writing period to output a write power, the first writing period and the second writing period having different lengths.

**[Claim 11]** 11. The method of claim 10 wherein the first writing period comprises a length for outputting the write power to the optical disk, and the second write period comprises a length for outputting a bias power to the optical disk.

**[Claim 12]** 12. The method of claim 1 wherein the step (c) further comprises: when forming the odd mark on the optical disk, using a first writing period, a second writing period and a third writing period to output a write power, the second writing period being between the first writing period and the third writing period, and the first writing period, the second writing period and the third writing period having different lengths.

**[Claim 13]** 13. The method of claim 12 wherein the first writing period comprises a length for outputting the write power to the optical disk, the second writing period comprises a length for once again outputting the write power to the optical disk, and the third writing period comprises a length for outputting a bias power to the optical disk.

**[Claim 14]** 14. The method of claim 1 wherein the step (c) further comprises: when forming the odd mark on the optical disk, using to a first writing period, a plurality of second writing periods and a third writing period to output a write power, the plurality of the second writing periods being between the first writing period and the third writing period, each of the second writing periods being the same in length, and the first writing period, one of the second writing periods and the third writing period having different lengths.

**[Claim 15]** 15. The method of claim 14 wherein the first writing period comprises a length for outputting the write power to the optical disk, each of the second writing period comprises a length for once again outputting the write power to the optical disk, and the third writing period comprises a length for outputting a bias power to the optical disk.

**[Claim 16]** 16. The method of claim 1 wherein the step (c) shortens the total lasting time of the plurality of the writing periods used for forming the odd mark when the timing occurring the maximum signal strength in the signal waveform associated with the test odd mark lags behind the timing occurring the maximum signal strength in the second ideal waveform, and the step (c) lengthens the total lasting time of the plurality of the writing periods used for forming the odd mark when the timing occurring the maximum signal strength in the signal waveform associated with the test odd mark leads the timing occurring the maximum signal strength in the second ideal waveform.

**[Claim 17]** 17. An optical disk drive comprising:  
an optical pick-up unit (OPU) for outputting a laser beam to burn a plurality of odd marks and a plurality of even marks on an optical disk; and  
a controller connected to the optical pick-up unit, the controller being capable of driving the optical pick-up unit according to a 2T write strategy, and controlling the optical pick-up unit to use a plurality of writing periods

comprising at least triple a base period to output the laser beam to burn an odd mark and an even mark on the optical disk.

[Claim 18] 18. The optical disk drive of claim 17 further comprising a detector connected to the controller, the detector being capable of notifying the controller how to adjust the writing periods according to the information obtained from reading the odd marks and the even marks by the optical pick-up unit.

[Claim 19] 19. A calibration system for an optical disk drive comprising:  
a detector for analyzing profiles and distributions of different marks recorded on an optical disk; and

an adjuster connected to the detector and an optical pick-up unit, the adjuster being capable of adjusting a plurality of writing periods used by the optical pick-up unit according to the information analyzed by the detector, the writing periods comprising at least triple a base period and being used by the optical pick-up unit to output a laser beam for forming an odd mark and an even mark on the optical disk.

[Claim 20] 20. The calibration system of claim 19 wherein a rule adopted by the adjuster to adjust the plurality of the writing periods comprises:

when a characteristic curve of a mark reveals a maximum value prior to an ideal characteristic curve, increasing the total recording time for forming the mark;

when a characteristic curve of a mark reveals a maximum value later than an ideal characteristic curve, reducing the total recording time for forming the mark; and

when a characteristic curve of a mark becomes wider or narrower than an ideal characteristic curve, adjusting the total recording time for forming the mark according to a try-and-error method.